



An investigator from the TCEQ's San Antonio regional office demonstrates a GasFindIR camera. The cameras, which can detect authorized or unauthorized VOC emissions invisible to the unaided eye, are used to survey oil and gas facilities in the Eagle Ford Shale and other oil and gas-producing regions, as well as many other types of facilities around the state.

TCEQ photo

MAINTAINING AIR QUALITY IN THE EAGLE FORD SHALE

Developing Natural Resources while Protecting Health and the Environment

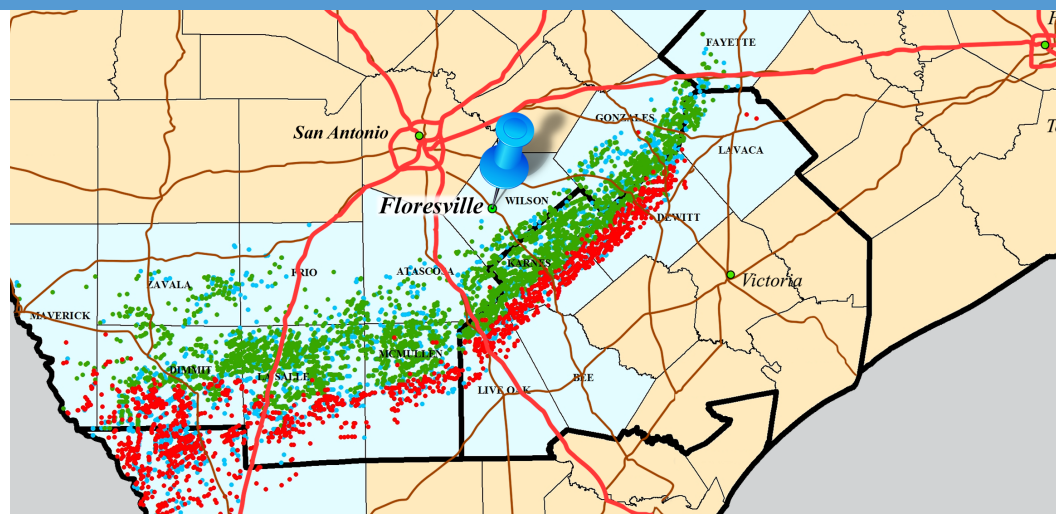
Although the United States is still struggling to recover from a serious, lengthy recession, one bright spot in terms of jobs and economic growth continues to be the state of Texas. This is due in no small part to the growth of oil and gas exploration and production, which has expanded largely due to the process of hydraulic fracturing and improved techniques for horizontal drilling. As the Texas Railroad Commission said, "The shale revolution is sweeping the country and revolutionizing energy and the economy, with Texas and the Eagle Ford Shale leading the way."

A recent study conducted at the University of Texas at San Antonio determined that 2012 oil and gas activity had a major economic impact across the Eagle Ford Shale, supporting 116,000 jobs and adding more than \$61 billion to the economy.

The Eagle Ford Shale encompasses approximately 24 counties, and stretches from the Mexican border between Laredo and Eagle Pass, up through counties east of Temple and Waco.

ENSURING AIR QUALITY

The TCEQ's primary role in the oil and gas fields is regulating emissions and ensuring



The TCEQ's new automated gas chromatograph is located in Floresville, between the Eagle Ford Shale and San Antonio. The monitor was placed here to measure general air quality in an area downwind of oil and gas activity in the Eagle Ford Shale and to better understand ozone precursor levels generally downwind of the shale area but generally upwind of the San Antonio metropolitan area. The red dots are natural gas wells, the green dots are oil wells, and the blue dots are permitted, but not completed, wells. Map courtesy of the Texas Railroad Commission.

air quality. Working with the Railroad Commission and other Texas agencies, the TCEQ is devoting significant resources to make sure those responsibilities are successfully met.

Just as the TCEQ found in the Barnett Shale in North Texas, monitoring data provides evidence that overall, shale-play activity does not significantly impact air quality or pose a threat to human health. This conclusion is based on several million air-monitoring data points for volatile organic compounds (VOCs) and other air

pollutants that the TCEQ has collected since 2000, in both the Eagle Ford and Barnett shales. While improperly operated facilities can result in temporary, local, unauthorized emissions, there are no indications that these emissions are of sufficient concentration or duration to harm residents of the Eagle Ford or Barnett shales.

Rapid Response

The TCEQ has a vigorous, effective monitoring, investigation, and enforcement operation in the Eagle Ford. Therefore,

when problems are detected, the TCEQ can make sure they are rapidly addressed.

There are two fixed monitors in the Eagle Ford Shale: in Floresville and Laredo. Neither of these monitors has detected levels of concern for VOCs. The TCEQ has also contracted with the University of Texas to conduct mobile monitoring upwind and downwind of the Eagle Ford Shale.

Aerial Surveys

Using infrared imaging cameras mounted on aircraft, the TCEQ has conducted two extensive aerial surveys of the Eagle Ford Shale to spot VOC emissions. In the most recent survey, in summer 2013, the flyovers collected 286 aerial video images. More than 10,000 individual tanks were surveyed, and approximately 5 percent were found to have some degree of emissions, either authorized or unauthorized. Follow-up investigations are being conducted at facilities with observed emissions to determine compliance with authorizations and regulations.

Ground-Based Reconnaissance

Since 2011, TCEQ staff has also been conducting regular ground-based reconnaissance investigations throughout the Eagle Ford Shale, often using handheld infrared imaging cameras. These are proactive measures to identify sites and issues, and follow up on previous complaint investigations. Over the past year, approximately 400 investigations related to oil and gas activities were conducted in the Eagle Ford Shale.

Formal notices of violation have increased as drilling activities have increased, reaching approximately 100 in the past 12 months.

MAINTAINING RESPONSIVENESS

There have been approximately 200 complaints to the TCEQ about various issues associated with oil and gas drilling in the



The TCEQ's new near-real-time, automated gas chromatograph in Floresville takes samples of volatile organic compounds around the clock. These results are posted on the TCEQ website. The Floresville monitor results are available at <www.tceq.texas.gov/goto/FloresvilleMonitor>.

Eagle Ford Shale. Less than 100 of those were for odor or air issues. The remaining complaints were related to spills, dust (traffic or construction concerns), or waste or water quality issues. Approximately 40 percent of the complaints received by the TCEQ, including some of those related to odor and air issues, were referred to other, more appropriate state agencies or to local governmental entities that have jurisdiction over aspects of oil and gas activities.

Disputed Issues

Some groups are criticizing the use of hydraulic fracturing in gas and oil production around the country, and these groups have also focused on the Eagle Ford Shale. These groups sometimes use misleading and incomplete summaries of actual events to make them sound alarming.

In one event, for instance, the activists state that TCEQ investigators found high levels of VOCs at a site and then left the site, without taking further action to reduce pollution.

In fact, TCEQ investigators did find fugitive emissions of VOCs *inside the*

fence line of the facility. The investigators stepped away from the immediate area, the facility representative radioed for a repair crew to come to the site, and the leak was fixed that same day. Like most unauthorized emissions from oil and gas activity, this one was caused by an equipment issue—in this case, a bad valve. The activists also reported that there was a residence 400 feet away from the site, but the “residence” was actually a water tank.

Positive Results

The TCEQ's investigation and monitoring methodology grew from the experience gained earlier in the Barnett Shale, where media and activists raised concern around potential emissions from oil and gas production. Drilling activity in the Barnett Shale takes place in a much more suburban, or even urban, environment than most drilling in the Eagle Ford Shale.

However, this concern in the Barnett Shale has subsided, as a [network of 24-hour, near-real-time, automated gas chromatograph \(auto-GC\) monitors](#) came online and posted their results on the TCEQ website. With millions of measurements

each year, the TCEQ has found no cause for alarm.

Another factor in calming concerns was blood and urine [testing done by the Texas Department of State Health Services](#) in the town of Dish, where much of the concern about emissions centered. Samples from nearly 30 volunteers showed that no community-wide exposure from oil and gas operations was occurring.

GATHERING CONSENSUS

Scientific Studies

Several recent reports support the TCEQ's methods and judgment.

The [Mickey Leland National Urban Air Toxics Research Center published a report](#) in 2011 that measured actual emissions from active oil and gas production sites. They found that, due to the amounts and volatility of the emissions, downwind measurements of VOC emissions had generally dropped to background levels 100 meters (328 ft.) from the facility's fence line.

A [recent study by the University of Texas](#) found that methane emissions, which some think have a role in global warming, are generally in line with estimates from the EPA. The study found that methane emissions are lower than

estimated in some parts of the process, and higher in other parts, but much lower in general than earlier estimates by drilling critics.

Another [recent study, paid for by the Barnett Shale Energy Education Council](#), concluded that "Barnett Shale gas production activities—including hydraulic fracturing—have not resulted in community-wide exposures to chemicals at levels that would pose health concerns. With the high density of active natural gas wells in the Barnett Shale region, these findings may be useful for understanding potential health risks in other shale play regions."

Prominent Endorsements

The safety of hydraulic fracturing also gets endorsements from federal government officials.

Earlier this year in a [Las Cruces, N.M., newspaper](#), former Obama administration Secretary of the Interior Ken Salazar was quoted as declaring, "I would say to everybody that hydraulic fracking is safe."

At a [speech in Columbus, Ohio](#), former Obama administration Secretary of Energy Steven Chu said that hydraulic fracturing "is something you can do in a safe way" and dismissed a Cornell

University study critical of fracking by saying, "We didn't think it was credible."

And, in a [meeting with the editorial board of the New York Daily News](#), current Secretary of Energy Ernest Moniz said that hydraulic fracturing for natural gas is climate friendly, environmentally safe, and economically stimulating.

MAINTAINING VIGILANCE

There are also concerns with the rapid growth of oil and gas activities in the Eagle Ford Shale. Traffic, road maintenance, housing for workers, water usage, and drilling waste are all issues, and are all being addressed at various levels by industry and local, state, and federal governments.

But residents can be assured that the TCEQ is working diligently to make sure that air emissions are monitored and controlled and that their health is protected from airborne emissions.

In cooperation with the Railroad Commission and other agencies, the TCEQ continues to work within its jurisdiction to ensure that oil and gas production is protective of human health and the environment, while at the same time allowing the continued production of the state's natural resources. 🐼

On the Web

Articles and studies referred to in this article:

www.tceq.texas.gov/goto/FloresvilleMonitor
www.tceq.texas.gov/goto/autogc
www.tceq.texas.gov/goto/dshs-health-study
www.tceq.texas.gov/goto/leland
www.tceq.texas.gov/goto/methane
www.tceq.texas.gov/goto/barnettshaleaq
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www.tceq.texas.gov/goto/moniz



Watch these videos on our YouTube site (youtube.com/user/TCEQNews):

- TCEQ investigators show how they protect air quality in the Eagle Ford Shale
- Take a tour of the TCEQ's new Auto-GC air monitor in Floresville



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